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# SCIENCE NEWS LETTER

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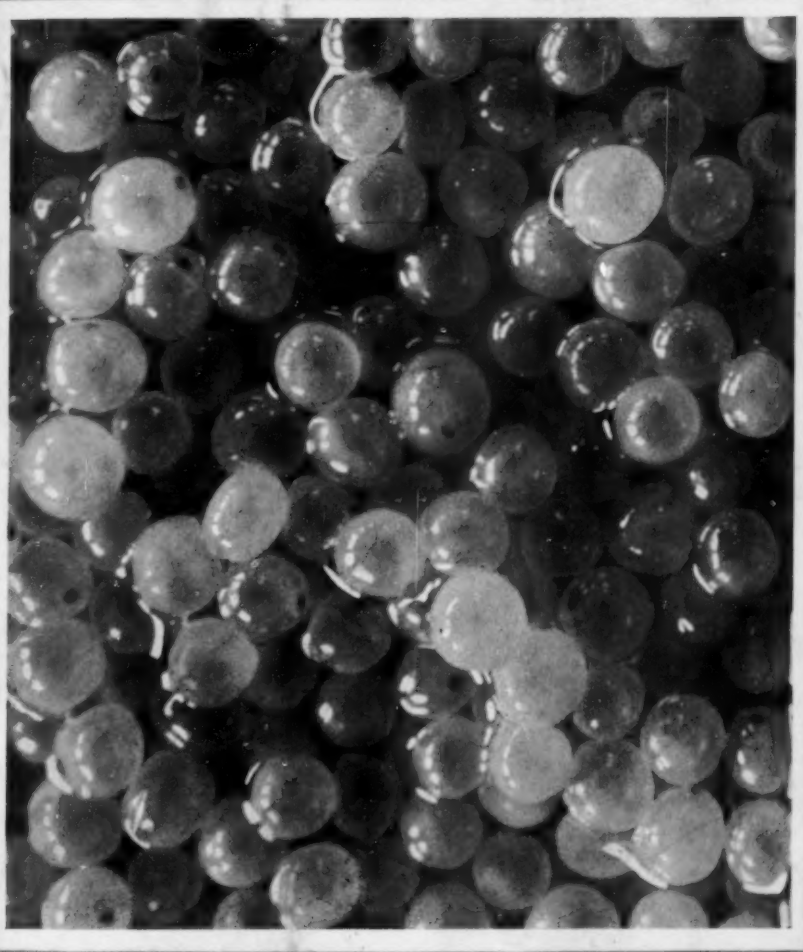
THE WEEKLY SUMMARY OF CURRENT SCIENCE •



APRIL 10, 1937

## Living Pearls

See Page 236

A SCIENCE SERVICE PUBLICATION

# SCIENCE NEWS LETTER

*Vol. XXXI* *No. 835*

The Weekly Summary of

Current Science

*Published Every Saturday by*

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*Edited by* WATSON DAVIS

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# DO YOU KNOW?

Aristotle described about 170 birds in his writings on nature.

The world's richest iron-producing field is in Lapland, north of the Arctic circle.

A baby has 11 more bones than an adult, because certain bones in the skull and end of spine later join.

Less than 10 chicken varieties are commercially important in this country, though 140 standard varieties are recognized.

There are about 379 radio beacons in the world, aiding navigators, and one third of these are in United States waters.

Even when shoulder firearms had been invented 160 years, writes an army ordnance expert, the clumsy arquebus was rated less deadly than the bow.

Writing was invented, says one archaeologist, because priests needed to record gifts, loans, wages, and other business dealings that centered at wealthy temples.

There are about 2,000 glaciers in the Alps.

Rope and cord made out of glass yarn are now on the market.

Hypnotism as an aid to dentistry is being tried in the Royal Dental Hospital in London.

Americans eat over 160 kinds of sea food from the lakes, streams and coastal waters of this country.

An agricultural scientist grades soil into seven grain sizes: gravel, coarse sand, medium sand, fine sand, very fine sand, silt, and clay.

Puerto Rican scientists have found that static coming from hurricanes can be identified, and now they hope this static can be used to trace sources of hurricane disturbances.

In ancient Egypt, blind people are said to have used a system of knotted strings on which they could keep records or receive messages, since the position and size of the knots represented different characters.

## WITH THE SCIENCES THIS WEEK

*Most articles are based on communications to Science Service or papers before meetings, but where published sources are used they are referred to in the article.*

ARCHAEOLOGY

What are the world's oldest statues made of? p. 227.

What was Aaron's "graving tool"? p. 238.

ASTRONOMY

Why should an artist travel far to see an eclipse? p. 229.

BOTANY

Can you gather acorns from vines? p 238.

CERAMICS

How can photography promote chinaware manufacture? p. 234.

CHEMISTRY

How was Element 87 "lost" again? p. 231.

ENGINEERING

Where would a gas alarm be useful? p. 232.

GENERAL SCIENCE

Is there biological justification for "liberty, equality, fraternity"? p. 227.

What tour will combine science and business? p. 233.

GEOGRAPHY

What American region resembles the famine area of China? p. 233.

MEDICINE

How long ago was electrotherapy prophesied? p. 228.

What ills can benefit from fever treatment? p. 229.

METEOROLOGY

Where are the sunniest places in the United States? p. 237.

ORNITHOLOGY

How often must a bird population be counted to be sure of a good census? p. 232.

PHARMACY

What drugs, now common, were unknown ten years ago? p. 236.

PHYSICS

What new kind of particle is yielded by bombarded lithium? p. 232.

PSYCHOLOGY

How can you stop thinking in a rut? p. 230.

PUBLIC HEALTH

How seriously does syphilis influence employability? p. 227.

GENERAL SCIENCE

# Abolition of Maternity Price of Woman's Equality

## Well-Known Princetonian Looks at The World Through Biological Glasses; Says Democracy Biologically Necessary

WOMAN can achieve full equality with men, full freedom such as the male sex enjoys. But only if she pays for it with her function of motherhood.

So declared Dr. Edwin Grant Conklin, emeritus professor of biology at Princeton University, in the Westbrook Lectures which he delivered at the Wagner Free Institute of Science.

Dreams that babies can be produced "ectopically", that is, by laboratory methods outside the mother's body, Dr. Conklin characterized as "vain imaginings." So too, with the super-socialistic notion that a few women, selected as "race mothers" to produce all the children while all the rest are free for their careers. If there are to be children, it the race is to continue, it will have to be the age-old biological method, he declared.

Dr. Conklin is not haunted by the "Malthusian ghost," bugbear of many sociologists. "Science has created a human population problem by increasing the means of living and decreasing the death rate," he admitted. "However, overpopulation is limited to certain places or peoples, and it soon corrects itself. There is now more danger of underpopulation in Western Europe and North America than of overpopulation."

Progress in human affairs is still possible, but it must come mainly through improved control over man's environment, Dr. Conklin told his audience.

### Slow

"Improvements of heredity must necessarily be very slow," Dr. Conklin said. "In its present state the world cannot wait for such improvement, whereas great progress can be made by the better use of the inherited capacities we have, by cultivation of better education, better habits, better morals.

"Many social evils, such as slavery, witchcraft, torture of heretics, dueling, etc., have disappeared under the influence of enlightened public opinion. May we not hope that national, racial, and class antagonisms and wars may be overcome in the same way?"

Democracy need not be abandoned for any discernible biological or social reason, critics and doubters to the contrary notwithstanding, declared Dr. Conklin.

Liberty, equality, and fraternity, the triple slogan of Democracy's battles a century and a half ago, he put to the biological touchstone.

Liberty, he said, has been the goal of human struggle since the dawn of history, and much progress has been made toward its better attainment. Yet there is no absolute freedom; "fanatical extremes of liberty and anarchy find no successful counterpart in biology where life and progress consist in balance and compromise."

### A Stumbling Block

Equality as a rigid dogma has been a stumbling block of unrealistic supporters of democracy. Dr. Conklin pointed to the obvious natural inequalities that exist among men, and declared that their very existence renders democracy a necessity, so that individual merit may seek its own level unhampered by rigid family and class distinctions. "Hereditary aristocracy is founded upon an obsolete idea of heredity," he declared. "It confuses the human law of entail with the natural law of Mendel."

Fraternity, the third great revolutionary democratic watchword, has deep roots in biological truth, the speaker indicated. "All men are cousins if not brothers. All trace back to common ancestors. The most diverse races of men have more fundamental resemblances than differences."

Democracy, Dr. Conklin insisted in conclusion, contributes more than any other system to general peace and progress, "and there is no sufficient biological or social reason for thinking that it must be abandoned."

*Science News Letter, April 10, 1937*

*OLDEST HITCH-HIKERS?*

ARCHAEOLOGY

## Metal Statues of Man Called World's Oldest

THE oldest metal statuettes of men and women ever discovered have been unearthed in ruins of a temple in Syria, dating from 3300 B. C.

Quaint, stiff little figures with solemn faces and arms folded or bent sharply upward, these copper statuettes are believed to represent gods of war and goddesses of fertility. They were discovered by the Syrian expedition of the Oriental Institute of the University of Chicago, at Tell Jedeideh. The male figures wear silver helmets almost hiding their eyes, and the women have silver curls or an elaborate headdress.

Several months of careful cleaning have been required to remove the corrosion wrought by 50 centuries, revealing the striking sculptural style.

*Science News Letter, April 10, 1937*

PUBLIC HEALTH

## Relief Rolls Show Economic Importance of Syphilis

THE SERIOUSNESS of syphilis from a dollars-and-cents standpoint has been proved in Fulton County, Georgia.

A study of syphilitic and non-syphilitic persons on the relief rolls of that county has been made with federal funds, and Dr. J. G. McDaniel, of At-

lanta reports the results. (*Journal, American Medical Association,* April 3.)

About 34 per cent. of the Negroes and 7 per cent. of the white persons on the county relief rolls are syphilitic. Of that number 17 per cent. between 20 and 40 years are not able to do competitive work. Sixteen per cent. of those past 50 years are not able to work at all.

The Fulton County study showed a sudden drop in the number of the syphilitic between the ages of 39 and 60 and over. This rapid decrease means one of three things, according to Dr. McDaniel — the people died, have been treated or are not able to report.

No orderly train of symptoms could be found resulting from syphilis in the Fulton County study.

All physical abnormalities were more frequent in persons who had syphilis.

"There is no disease that I know of, found among such large numbers, that responds so beautifully to treatment as does syphilis, nor can I think of one that has a longer latent period before serious symptoms manifest themselves, thereby affording a golden opportunity for diagnosis and cure or at least an arrest of the disease," Dr. McDaniel states.

*Science News Letter, April 10, 1937*

MEDICINE

# Fever Does Not Kill Germs; Should Build Up Resistance

FEVER treatment does not cure disease by killing disease germs. In diseases like syphilis and gonorrhea, fever should be used with chemical treatment as a means of building up resistance of organs and other body tissues against the germs of the diseases so that "the infection must eventually die away by itself."

Prof. Julius Wagner-Jauregg, Nobel Prize winner who originated fever treatment for the mental disease that is the late stage of syphilis, gave this explanation of how fever helps cure disease in a message to the First International Conference on Fever Therapy. The conference, of which he is honorary chairman, was held in New York last week.

### Spirochetes Persistent

Contradicting those who believe that the high artificial fever cures by killing the disease germs, Prof. Wagner-Jauregg, pointed out that the spirochetes of syphilis are present in the human organism for different periods of time. They are still capable of living even after a successful treatment with artificial fever, whether induced by malaria or by physical means such as short waves of fever chambers. The same holds true for the organisms of gonorrhea. The patient, however, is well after successful treatment, so the great Viennese scientist advised fellow medical men to revise their theory but to keep up the method of treatment.

Prof. Wagner-Jauregg first tried malarial fever as a cure for general paralysis of the insane, dread late stage of syphilis, in 1917. His success with this kind of fever treatment, in which the fever was produced by deliberately giving the syphilitic patient malaria, started a world-wide wave of fever treatment culminating in the conference. Long before 1917, however, Prof. Wagner-Jauregg had tried to cure mental diseases by artificial fever. In 1891 he made his first attempts, using tuberculin. Some of these early patients recovered and "enjoy the best health even now, after more than 20 years," Prof. Wagner-Jauregg reported. As early as 1887, he held that the high fever does not kill the germs but is an index of the intensity of the curative process running its course.

The importance of using chemical methods along with artificially produced fever in treating disease was also emphasized by Prof. Wagner-Jauregg.

### Fulfills Old Prophecy

A prophecy made over half a century ago, that electricity would be used in treating disease, has come true and the scientist who made it is still alive to see his then rash statement justified.

The scientist is the 86-year-old Prof. A. D'Arsonval of Paris, whose galvanometer is familiar to every high school physics student. He recalled his early statement in a message to the Conference. Prof. D'Arsonval is honorary president of the French committee of the conference.

"I am forgiven today," Prof. D'Arsonval concludes his message, "for the phrase which I am proud of having written in 1882 and to which, at the time, I owed the animosity of doctors and pharmaceutical chemists.

"'I am persuaded,' I said, 'that the therapeutic of the future will employ, as a curative means, the physical modificators, heat, light, electricity and other agents still unknown . . . And that the most poisonous drugs of chemistry will have to give place to these imponderables that have the advantage of introducing no poison into the organism.'"

### Warns Against General Use

A warning against abandoning the tried and tested chemical means of treating early syphilis for the newer fever treatment was sounded at the Conference of Fever Therapy. The warning came from Dr. Walter M. Simpson, director of the Kettering Institute for Medical Research, Miami Valley Hospital, Dayton, Ohio, and his associate, Dr. H. Worley Kendall.

Artificial fever treatment is effective in the treatment of neuro-syphilis but its use in treating early syphilis, before nervous and mental symptoms have developed, is still in the experimental stage, these physicians said.

The combined fever and chemical treatment "is not applicable at the present stage of its development to any mass management of the million or more individuals in this country who urgently require treatment for syphilis, each year," Dr. Simpson declared.

### Malaria Germs Injected Into Brain

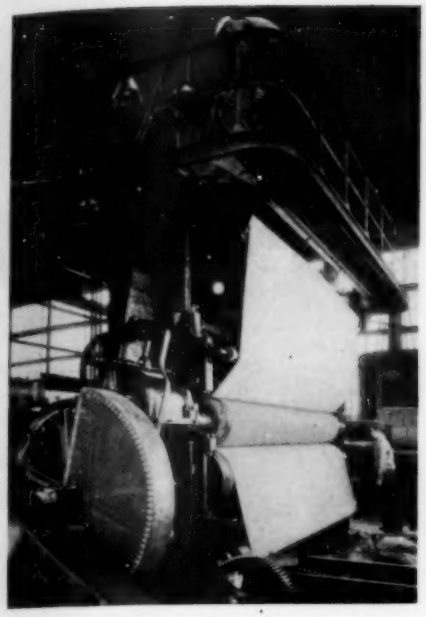
A new method of using malaria to treat paresis, the mental disorder due to syphilis, was reported by Dr. Maurice Ducoste, chief physician at the Psychiatric Hospital, Villejuif, France.

Dr. Ducoste injects directly into the brain a small quantity of blood containing malarial germs. He adds tetanus (lockjaw) antitoxin to the malarial blood before injecting it and believes this makes the treatment more effective.

Out of 453 patients treated in this way in the last 10 years, 353 have been cured, Dr. Ducoste reported. There were 26 deaths from other diseases or accidents several months or years after the treatment. The failures amounted to 12.8 per cent.

Use of fever treatment in eye conditions, particularly those due to syphilis and gonorrhea, was reported by Dr. L. Hambresin of Paris and by Dr. John S. McGavic of the Cincinnati General Hospital in this country.

In the condition known as specific simple atrophy (wasting) of the optic



**MAKING PIPE**

***A section of transite pipe is being made on the big horizontal roller or mandrel of this machine. The wide, continuous felt belt picks up a wet mixture of asbestos fibre and cement and deposits it on the revolving steel mandrel, thus building up the pipe to the required wall thickness. One twenty-fifth of an inch is added with each revolution. Steel pressure rolls bearing against the deposited mixture on the mandrel produce a dense, homogeneous structure and create a strong bond between cement and asbestos fibre.***

nerve, fever treatment is the only method which can check the injury and prevent the patient from becoming blind, Dr. Hambresin stated. Even with this method, however, the eyesight cannot be saved in all cases, it appears from Dr. Hambresin's report. He stressed the importance of starting the treatment early in the eye diseases and of using chemicals with the fever treatment.

The results of fever treatment in 7 cases of inflammation of the cornea due to syphilis were more impressive than in any other type of eye disease, Dr. McGavic reported from his experience. Patients who usually stayed in the hospital for many weeks before showing appreciable improvement opened their eyes and left them open after one or two fever treatments. Other forms of treatment had been most disappointing in previous cases of this eye disease. The more acute the stage, the better was the response.

In gonorrheal eye disease heat treatment seemed to increase the amount of pus formed in the conjunctival sac following the first and second treatment. After that, Dr. McGavic reported, the discharge steadily diminished and tests soon showed that the germs of the disease had been eliminated. He recommended giving heat treatments in this condition as frequently as the patient can stand them because the more rapidly the infection can be cured the less likely will be damage to cornea.

### St. Vitus' Dance

The irregular, jerking movements of St. Vitus' Dance or chorea were checked in nearly nine-tenths of the cases after an average of 4 sessions of fever treatment, Drs. Maurice Blatt and Clarence A. Neymann and Mr. S. L. Osborne of Northwestern University Medical School reported. They have treated 25 children suffering from this disease. Although it is still too soon after the treatment, except in the first 7 cases, to draw definite conclusions, these scientists believe that with the exception of those patients who relapsed soon after treatment ceased they have really been able to cure chorea and to stop its recurrence.

Although fever due to poisons from disease germs may be a grave strain on a heart damaged by rheumatic fever or chorea, the Northwestern University scientists found that electrically induced fever did not adversely affect the hearts of the child rheumatic fever and chorea patients they treated.

### Helps Angina Pectoris

Angina pectoris, much-dreaded and painful heart disease, can be helped by fever treatment when the fever is induced by electrical means, Prof. Charles Laubry, attending physician to the Hospitals of Paris, and his associates, Drs. Walser and Jean Meyer, reported. Short-wave electric currents across the heart are the best means of inducing fever for treatment of this condition, the French physicians find. In their series of 56 angina patients they obtained very good results with this treatment in 40 per cent. and fair results in 20 per cent.

Treatment with short wave electric currents (diathermy) which did not raise the temperature of the patient gave good results in cases of high blood pressure. The blood pressure, the French physicians reported, decreases and remains lowered for several weeks or months.

Prompt relief and apparent cure in 12 of 20 cases of acute infections non-specific arthritis and partial relief in another 8 cases were the results of fever treatment with the Kettering Hypertherm reported by Drs. Robert M. Stecher and Walter M. Solomon of Western Reserve University Medical School. Fevers of about 105 degrees Fahrenheit were maintained for four or five hours in each treatment. Just how the treatment helps this condition is not clearly understood, but the Cleveland physicians suggest that a rise of white blood cells and an increased blood flow may be responsible.

Fever treatment gave complete relief from joint pain and swelling and seemed to reduce the duration of attacks of acute rheumatic fever, Drs. E. E. Simmons and F. Lowell Dunn of the University of Nebraska College of Medicine reported. Since this disease has periods when it subsides by itself, only to start up again, these physicians pointed out that it will be a long time before final conclusions as to the value of fever treatment can be known.

### Neuritis Relieved

All types of neuritic pain can be relieved by fever treatment, although the condition causing the pain is not necessarily cured, Drs. A. E. Bennett and Paul T. Cash of the University of Nebraska reported. They stated that other measures of treating the conditions should also be used and warned against fever treatments being given except in institutions well equipped and staffed to handle any dangers that may arise.

*Science News Letter, April 10, 1937*

ASTRONOMY

## Artist to Paint Eclipse On Next June 8

WITH an artist's eye and a physicist's scientific knowledge of colors, Charles Bittinger, well-known Washington painter, will work with the astronomers of the National Geographic-U. S. Navy Eclipse Expedition when they observe the total eclipse of the sun on June 8 from a desert islet in the remote South Pacific.

Because of its unusually long duration—four minutes and ten seconds at the point of observation—it will afford exceptional opportunities to both artist and astronomer.

Mr. Bittinger has made a special study of pigments and their combination, from the scientific as well as the artistic angle. He has also studied the effects of light of all wavelengths. Some of his paintings are double, showing one scene by ordinary daylight and an entirely different picture when viewed under ultraviolet radiation.

*Science News Letter, April 10, 1937*

PSYCHOLOGY

# Do You Think in a Rut?

## Psychologist Offers Three Simple Rules for Thinking Successfully and for Avoiding a Mental Treadmill

By MARJORIE VAN DE WATER

MANY a night's sleep has been lost when a man has been driven to thought. Perhaps it is a mortgage falling due, or a rent bill that must be paid, or a decision that must be made about leaving one job for another, how to make peace after a quarrel, or how to win out against a competitor in a business deal.

Some emergency in life has tumbled a man-sized problem into your lap. Your future depends upon a satisfactory solution. You are compelled to think. Then what do you do?

### Need for Action Felt

The chances are that the urgent feeling of a need for action makes you unconsciously get up and begin to pace restlessly back and forth. The effort to induce thought brings perspiration to your forehead. You smoke or take a drink of dark strong coffee. The solution does not appear.

Over and over you say to yourself, "I must find the way out of this!" That gets you nowhere. You were already aware of the need for a solution. That does not produce it.

Over and over you repeat to yourself the various ways in which you have met similar situations in the past. That is no good. You have tried them all either actually or in your mind and you know perfectly well that they won't work. They are worn out. They do not fit the present situation. And yet you keep going over them again and again, considering and discarding and considering again.

The night wears on and you find yourself going around and around in circles. Your bedroom slippers are wearing a pathway on the carpet. You observe that you have been half-consciously stepping on certain flowers or squares in the design each time as you come round. Much the same thing is going on in your mind—an endless treadmill.

Some people never are able to find the way out of this endless circle of recurring wrong answers to the problem. Those who do very likely give up the task first. They go to sleep, or they go outdoors and get a complete change of scene. They take their minds off the problem entirely.

Then, when they come back to it, it may be with a fresh approach. With this fresh perspective, the old ways of meeting the situation do not occur to the mind. Instead, some entirely new plan is considered, and it may be that it is one that will work. So the solution seems to come to the mind readymade as though in a flash of inspiration.

Some say that this is due to the working of the unconscious mind during sleep. Others feel that it is an answer to the earnest prayers they have said upon retiring. Some call this flash insight and hold that it is the natural result of all the preceding toil with trial-and-error taking up and discarding of wrong answers. But some psychologists say that it is merely a matter of getting the human thinking apparatus really down to original work at last.

Most people think in a rut. Far from being an original creative process, their mental exercise is a mechanical repetition of a treadmill routine in a pathway dictated by habit, by tradition, and by more or less fixed attitudes. This Prof. Samuel W. Fernberger has concluded from years of first-hand observation of students of his psychology classes in the act of thinking.

### "What Dogs Do"

As a demonstration of the way habit and preconceived ideas restrict thought, Prof. Fernberger points to a simple crossword puzzle consisting of 16 squares. Reading across, the 4 four-letter words indicate, "What dogs do, what cats do, what lions do, and what humans do." Reading down they are respectively "Insects, organs of vision, vex and comfort." Prof. Fernberger guarantees that it holds rare difficulty for the crossword puzzle fan. If you are one of those persons who still work out the daily puzzle, you will not find this one so simple as it looks. Try it before you read the next paragraph.

Did you get the solution? If not, just rid yourself of the habit dictated notion that you must find a different word for each of the four rows across. Probably the word "bite" was one of the first that occurred to you. See how neatly it fits all four requirements. Write them all in, and then see what you have reading down. You will find that you have Bs, Is, Ts, and Es, which fill the bill for all the downward requirements.

Not fair? No, but that is true of so many of life's problems, in the sense that they demand entirely new attitudes and a freedom from the past for their proper solution.

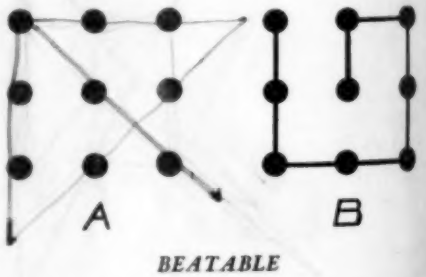
The dot puzzle provides another example of how iron-bound the average person's thinking is by preconceived ideas. Perhaps you would like to try it.

Nine dots are arranged in the form of a square. The problem is to join these nine dots with a series of continuous straight lines without taking your pencil from the paper. It is easy to connect the 9 dots in the form of a square with a series of 5 straight lines. But can you do it with only four lines?

### Match-Stick Mathematics

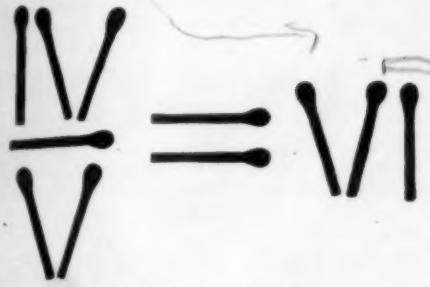
Here is another to be worked with match sticks. Lay them out so that they form the problem four divided by five equals six, with the numbers written in Roman numerals. The idea is then to move just one match in such a way that a true mathematical equation is produced. The match is not to be taken away—just moved from one place to another.

The answers for these problems are given elsewhere in this issue. In each case the solution depends upon ridding yourself of your original notion. With the dots, if you had trouble with the problem it was probably because you were trying to stay within the square with your lines. The wording of the




BEATABLE

*It is easy to string the nine dots on five continuous straight lines. But can you do it with four?*



*THIS ISN'T TRUE*

***But you can resolve this mathematical absurdity and procure a balanced equation by changing the position of one match.***

problem suggested this to you although a second reading will show you that nowhere is this requirement stated. Let your pencil go beyond the limits of the square and you will have much less difficulty.

With the match problem, you were probably trying to change the numbers. If you rid your mind of this intention the problem changes. Try moving the match so as to change the mathematical symbols, and see how easy the solution becomes.

### Racial Predilections

The British psychologist, Prof. F. C. Bartlett, not long ago performed some ingenious experiments with memory. He found that an individual's race, habits, and social background strongly affected the way in which he would remember. One of Prof. Bartlett's tests consisted of a chain affair something like the old-fashioned game of gossip. A story was read to one person and he was asked to write it out from memory. Then the second person was given, not the original version but the first subject's transcription. And so it went throughout the chain. The final version bore little resemblance to the original, but the changes made depended upon the character of the group contributing to them. With Indian students, the revision was in an entirely different direction from what it was when the chain was circulated among English students.

Prof. Bartlett also found that when a person tries to memorize a scene or object briefly glimpsed, he forms a vague general impression of it and then tends to fill in details that his mind tells him belong to that impression. One person, for example, looked at a photograph and jumped to the conclusion it was a portrait of a typical "Tommy Atkins." Later that person "remembered" a bushy mustache and other details not present in the original photograph but which are customarily a part of the cartoon versions of the typical British soldier. Thus do your education and your attitudes affect your memory.

In similar fashion they affect your thinking. Given the same problem and the same set of facts, the college professor is likely to arrive at a different conclusion from that of the business man. The Republican's solution will differ from that of the New Dealer. The artist's will differ from the plumber's.

By the same token, different individuals who have been brought up together with similar background and habits of thought are likely to arrive at very similar solutions to their problems.

When you find yourself confronted with a problem that refuses mastery by your ordinary lines of thought, that is when you need to shake yourself loose from them—to tackle the matter from an entirely new viewpoint. If you haven't enough imagination to do that, it will help to get another person to analyze the problem for you. Sometimes just a word or two from another will be enough to suggest the new attitude to you and place the solution within your grasp.

Suppose your problem is the familiar one of a payment coming due on your automobile with no cash on hand to meet it. Unexpected illness in your family has drained your bank account of the funds you had reserved for this purpose. You consider borrowing at the bank, but that is not desirable because it might affect your credit in connection with a loan you want to make later for your business. In addition, the matter of the required en- (*Turn to Page* 236)

CHEMISTRY

# New Research Casts Doubt on Discovery of Element No. 87

THE MARCH of scientific research, continually seeking truth above all else, has reopened the question of the discovery of chemical element 87. Reporting in the technical magazine of the American Physical Society, *The Physical Review,* F. R. Hirsch, Jr., of Cornell University, presents new evidence which may indicate that the announcement by Prof. Jacob Papish and Eugene Wainer in 1931 regarding the discovery of the element was unfounded.

Prof. Jacob Papish and Eugene Wainer of Cornell's chemistry department, in that year announced their discovery of this element by using X-ray analysis. In the method X-rays from a target supposedly containing element 87 were reflected by a crystal of calcite and the resulting spectral lines fitted into positions predicted for the then unknown element.

Now, F. R. Hirsh, Jr., also of Cornell, has performed essentially the same experiment and used the identical calcite crystal which was a basic part of Prof. Papish's apparatus.

He finds that the supposed characteristic X-ray lines of element 87 are really produced by the surface irregularities of the crystal itself. Mr. Hirsh has been able to obtain the crucial and important lines when a plain copper target was substituted for the sample in which he was trying to detect element 87.

By a technique called "rocking the crystal" Mr. Hirsh was able also to make the key lines vanish, which proves that the effect was due to the peculiarities of the crystal.

Of course, experiments by one investigator alone do not settle the matter conclusively but if the work is repeated with the same results by an independent and competent research scientist, the whole question of the discovery of element 87 will again be thrown open.

In this connection it is recalled that the X-ray detection of element 87 by Prof. Papish and Mr. Wainer came at a time when Prof. Fred Allison and Dr. E. J. Murphy at Alabama Polytechnic Institute were claiming the discovery by the magneto-optic method.

To many workers in science, at least, the Allison-Murphy method has remained "questionable", as Mr. Hirsh expresses it in his current report to the Physical Review. Thus, the Cornell chemists with their X-ray technique seemed to have the inside track on claims to the discovery. Now, however, as scientist Hirsh puts it: "The search for element 87 is still open."

*Science News Letter, April 10, 1937*

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In Switzerland, fossil walnut trees have been found that grew around lake-dwellings on Swiss lakes in the New Stone Age 7000 B.C.

ENGINEERING

## Gas Alarm Like Fire Alarm Recommended for Schools

THE EQUIPPING of gas-heated schools with a gas alarm that would ring a bell and allow the pupils to troop out as in a fire drill is recommended by Dr. David J. Price, U. S. Department of Agriculture explosives expert, in a report just transmitted to the Governor of Texas by Secretary Wallace. He investigated the recent Texas explosion.

Dr. Price's first recommendation was that law require the use of an effective malodorant in natural gas so that the nose could detect a leak of natural gas that in its natural state is practically odorless.

*Science News Letter, April 10, 1937*

ORNITHOLOGY

## Who Are Your Bird Tenants? Census of Nests Planned

BIRDS are building nests again. How many, and what kinds, are nesting in your neighborhood? Science wants to know.

The first nation-wide census of nesting birds, to be taken by cooperating bird students everywhere, is announced by William Vogt, editor of *Bird Lore*, official magazine of the National Association of Audubon Societies. During the spring and early summer the volunteer census-takers will do their work, and in the October issue of the magazine the results will be published.

Methods of taking the census, as outlined by Mr. Vogt, indicate that it is a job only for the thorough and patient student of nature. The enumerator must select a definite area, from 15 to 150 acres in extent, and make a freehand sketch map indicating its principal features, vegetation type, and so on, and he must spot in every nest of every kind of bird in it. Where nests are too well hidden to be actually discovered, certain other criteria are accepted.

At least five times during the breeding season, at five-day intervals, the territory has to be gone over carefully, and every change in status of nests, bird pairs, unmated males, and other details noted. An abbreviation summary method prevents the records from becoming too bulky.

It is anticipated that the census will be repeated every year, so that study areas are to be chosen with this in mind.

In addition to the magazine publication of the census summary, the individual record maps are to be made available photographically in microfilm form by the system inaugurated by Science Service. They will thus be collected and kept on file in one central place, and copies can be made quickly and at low cost for anyone, anywhere in the world, who wishes to study the detailed records.

*Science News Letter, April 10, 1937*

PHYSICS

## New Clue to Atom's Heart From Artificial Element

A STARTLING new clue to the puzzling structure of the nucleus of the atom was revealed to scientists at Harvard University's Cruft Laboratory by Dr. J. D. Cockcroft, distinguished British physicist.

The clue was contained in an experiment Dr. Cockcroft and his associates recently completed at the Cavendish Laboratory, Cambridge, England, the first ever conducted in which the emission of heavy particles has been detected from an artificially produced radioactive substance.

Particularly impressive was Dr. Cockcroft's unexpected finding that these heavy particles possessed a continuous energy distribution, something never previously discovered in reactions of this type.

Dr. Cockcroft's experiments concerned the disintegration of radio-lithium, an artificially radioactive substance produced by bombarding a lithium isotope of mass seven with nuclei of heavy hydrogen atoms, an accepted experimental procedure in science's attempts to unravel the secrets of the atom.

Not expected, however, was Dr. Cockcroft's finding that "this radio-lithium breaks up apparently not into stable beryllium of mass eight but in general into a beryllium with a surplus of energy—an excited beryllium eight nucleus.

"This nucleus," he declared, "subsequently breaks up into two beryllium nuclei which may each have as much as six million volts energy but in general have less." These are the unexpected heavy particles.

The implications or theoretical explanations of the discovery are not yet clear, although it is expected eventually to be of considerable significance. Dr. Cockcroft believes "it may be necessary to assume that the beryllium nucleus of mass eight can exist in one or another of such excited states."

*Science News Letter, April 10, 1937*

# IN SCIE

ORNITHOLOGY

## Hawk-Eagle of Africa Sought by Falconry Expert

HUNTING birds such as medieval knight never dreamed of will be the objective of an expedition into Africa to be made by the English falconer, Capt. C. W. R. Knight, under the auspices of the National Geographic Society.

The birds are the crowned hawk-eagles, large birds of the South African forest. They are big, heavy, ferocious; their very appearance inspires terror. A favorite prey is monkeys; simian skulls frequently litter the ground beneath their nests. They kill with a sudden blow of their large feet.

Perched within a blind in a lofty tree opposite the nest of one of these birds, Capt. Knight will study them from egg to adult, and will use up many feet of motion picture film in obtaining a graphic supplement for his notes.

*Science News Letter, April 10, 1937*

MARINE BIOLOGY

## Last of Square-Riggers Hunts Crabs for Science

LAST of the famous old square-rigged ships, the Joseph Conrad, G. Huntington Hartford, owner, is sailing the Spanish Main in search of—crabs.

But it is no comedown from a romantic past for the Joseph Conrad; the cargo of crustacea with which she will return will never see any prosaic market or commonplace kitchen. These rare forms of pincer-clawed, many-legged life are sought for scientific museums. In charge of the scientific personnel of the expedition is Dr. Waldo L. Schmitt of the Smithsonian Institution, with G. Robert Lunz, Jr., of the Charleston, S. C., Museum, as associate.

Mr. Hartford, who recently purchased and completely refitted the old ship, has a special interest in sailing ships and in the history of piracy in the West Indian waters. By a fortunate coincidence, pirate-hunting and crustacean-collecting are both excellent in the shoaler waters of the West Indies. The expedition expects to be out about two months.

*Science News Letter, April 10, 1937*

# E FIELDS

GEOGRAPHY

## China's Famine Area Resembles Our Plains

CHINA'S appalling famine, that is claiming thousands of lives in Honan and Szechuen provinces, is caused by climatic and geographic factors very similar to those operating in western parts of the United States. These provinces of China, like the Great Plains area in our own country, are on the leeward side of great mountain barriers and the far end of a long journey of the prevailing winds. They are therefore regions of low rainfall in normal times, because most of the moisture has been squeezed out of the air masses before they reach this part of Asia. Even a slight decline in a season's precipitation brings the menace of drought.

To these conditions must be added a factor that is less important in the United States. Although these interior provinces are not so densely populated as the swarming areas nearer the coast, they are still far more thickly peopled than our own Plains region. Therefore a shortage following severe drought makes itself felt immediately. The people, so to speak, always have their mouths within an inch of the grass roots —there the "ever-normal granary" is one that is permanently almost empty. Furthermore, transportation lines such as in this country rush supplies into a drought-stricken area are almost lacking in China. Without a local food reserve, with no effective means for bringing in outside supplies, drought means immediate disaster.

*Science News Letter, April 10, 1937*

MEDICINE

## Insulin Finds New Use In Relief of Asthma

INSULIN, life-saving remedy in diabetes, has been put to a new use in the treatment of asthma. Results of this treatment are reported by Dr. Jakob Wegierko, physician-in-chief of St. Stanislaus Hospital, Warsaw, in the Austrian medical journal, *Wiener Klinische Wochenschrift.*

By giving enough insulin to produce insulin shock the shortness of breath of the asthmatic is quickly relieved in most cases. After several insulin-shock treatments, Dr. Wegierko reports, the nature of the asthmatic attacks is changed. They are less severe, occur less often, or disappear altogether.

Insulin shock occurs when so much insulin is given that the amount of sugar in the blood is rapidly reduced below normal. The patient becomes very weak, has an unsteady gait that may be mistaken for a sign of drunkenness, and rapidly reaches a critical condition unless the shock is counteracted by a dose of sugar.

In using insulin shock for the treatment of asthma, the dose is calculated so that the amount of blood sugar is only reduced to about half the normal amount. As soon as the treatment has begun to take effect and the breathlessness has been relieved, a dose of dextrose or grape sugar is given.

In mild cases, Dr. Wegierko gives the insulin-shock treatment every 3 or 5 days. In severe cases he gives it oftener, even as often as twice a day. In 96 per cent. of the patients weakness and sleepiness followed the treatment. In 40 per cent. there was perspiration and in 10 per cent. trembling and palpitation. In a few cases more serious symptoms followed the shock.

How insulin shock, which has recently been used also in the treatment of the mental disease, schizophrenia, acts to relieve asthma is not exactly known. Dr. Wegierko thinks it relieves the asthma by affecting the vegetative nervous system in such a way as to relieve the spasm of the bronchial muscles.

Dr. Wegierko plans to try the effect of insulin-shock in cases of gallstones, kidney colic and migraine headaches due to blood vessel spasm.

*Science News Letter, April 10, 1937*

ICTHYOLOGY

## Huge Shark Killed When Rammed by Steamer

KILLED when accidentally rammed by the Pacific steamer *Maunganui* a whale shark estimated as 55 feet long has been reported to Dr. E. W. Gudger of the American Museum of Natural History by Third Officer S. H. Crawford. Dr. Gudger has relayed the information to *Science* (Mar. 26).

The ship was steaming at 16 knots when it struck, and it was necessary to reverse the engines before the enormous carcass could be cleared of the bow.

*Science News Letter, April 10, 1937*

PSYCHOLOGY

## Brain Changes Alone Won't Bring on Senility

WHEN old people have failing minds, changes have occurred in the brain itself. But these changes do not tell the whole story of the senility, Dr. D. Rothschild concluded from a study of old people at the Foxborough, Mass., State Hospital.

All cases of senile psychoses are accompanied by changes in the brain, but other old persons who are perfectly normal mentally also show the age-induced changes. No relation seems to exist between the extent of brain changes and the deterioration of the intellect.

Those who retain a clear mind seem to have a capacity to compensate for the changes of age which is lacked by those who become senile. Inability to meet personal problems such as financial losses, breaking up of home, or placing in old persons' home, may be the crucial factor that impairs this ability to compensate and leads to the development of a senile psychosis, Dr. Rothschild suggested in his report to the *American Journal of Psychiatry.* (January).

*Science News Letter, April 10, 1937*

GENERAL SCIENCE

## U. S. Executives to Visit European Laboratories

MORE than thirty leading European research laboratories, representing 18 major fields of industry, will be visited by touring industrialists and banking executives who will participate in the trip sponsored by the National Research Council's division of engineering and industrial research during the coming summer.

Cavendish Laboratory of Cambridge University and the National Physical Laboratories at Teddington are two high spots of the itinerary in Great Britain. In France the Institut Pasteur and the Institut du Radium will be visited, along with the laboratories of the Citroen motor car and the Gaumont motion picture industry.

Germany will open its laboratories of the Kaiser-Wilhelm Institutes in metal research and a variety of other industrial fields as well as the Junkers Diesel works and the famed I. G. Farben Laboratories in chemistry, states Maurice Holland, director of the tour.

Participation in the tour will be limited to 100 of America's leading industrialists and bankers.

*Science News Letter, April 10, 1937*

CERAMICS

# Scientists Aid Ceramic Industry In Using Native Clays

## Abundance of Good Kaolin in Tennessee Valley; Cheap Current Makes Electric Kilns Possible

SCIENTIFIC research in Federal ceramic laboratories is on the trail of a discovery which will greatly extend the uses of American clays in the chinaware that graces the nation's tabletops.

At the National Bureau of Standards in Washington and in laboratories of the Tennessee Valley Authority near Knoxville the last two years have shown intensive exploration of the possibility of using native American clays for the production of fine translucent whiteware, much of which is still made, in part, from a superior clay imported from England.

Whether English clays are really superior to American kaolin or whether the latter can be refined to a form which competes with the imported variety is now a debatable topic. The fact in itself is a tribute for the research, for previously the subject was not even open to argument among pottery manufacturers.

### Just Mud to Layman

Kaolin, one should hasten to explain, is simply the potters' and chemists' technical name for a particular kind of pure and white clay which the layman would probably call—and rightly—just mud.

It is a long way geologically and in the evolution of the potters' art from the mud of kaolin to the prized "company" china on the family dinner table. Geologically kaolin consists of decomposed granite. The best kind has crumbled to dust and has then been purified by weathering. Deposits of kaolin in England are especially good for making the finer types of tableware, and many an American-made dish, teacup or saucer still contains some of the soil of good old Cornwall.

But America too has its decomposed granites and the resulting clay. North Carolina primary kaolins at a convenient and nearby source have been the main materials used in the TVA tests. Major previous handicaps to the exploitation of these North Carolina clays for fine china have been three: (1) It was believed that there was not sufficient material available for large-scale operations; (2) the kaolins of Carolina varied from one small deposit to another, and (3) the refined North Carolina kaolin previously marketed was low in its plasticity and strength and extremely difficult to work.

### 100 Year Supply Available

Already exploration has disclosed that point one—the supposed lack of large amount of material—is false. A reserve of refinable material is available which would last the American whiteware industries for generations to come.

Improved methods of refining American clays, involving the use of TVA's large potential supplies of cheap electricity, are making headway in clearing the two final objections—lack of uniformity and the difficulties as to strength and workability in the refined product.

One whole school of thought in the ceramic field refuses to admit that American clays are any less refined than those of England and that the previous lack of development of American kaolins has been due to the dominance of the whiteware industry by the English-born and trained manufacturers who first brought the industry to this country about 1875. A tendency to stick to English methods and English clays, by this viewpoint, has been natural.

### Industry for South

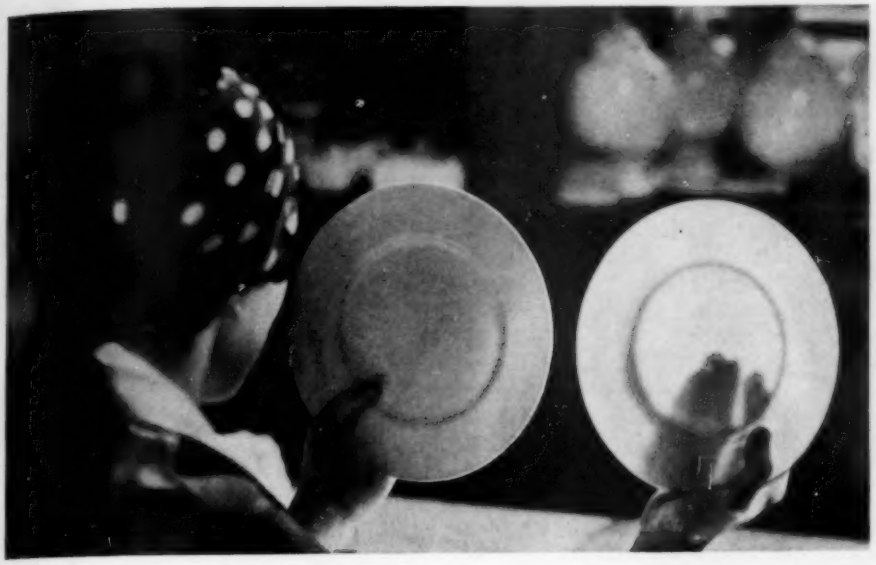
TVA's report on its attempt to substitute American kaolins for the imported variety has just been summarized at the recent meeting in New York of the American Ceramic Society. Admittedly certain technical problems have not yet been cleaned up to a point where the whole American industry can jump into production on a large scale, but a new ceramic industry for the South, at least, seems fairly sure.

For courage in experiment TVA wins the prize. They tackled one of the toughest of all ceramic problems; production of pure white, translucent and fragile china that would rival the best of foreign table whiteware.

On a laboratory scale this goal has been achieved and novel refining meth-

*MASTER MOLD*

***It makes the famed willowware pattern by the Ford glazing method. The body material of the plate is pressed against this form and takes the surface which will be the face of the plate after glazing has applied the characteristic blue color in shades from pure white to deep blue.***



*ELECTRICITY BRINGS BEAUTY*

***Experiments in the ceramics laboratory of Tennessee Valley Authority have discovered ways to use native American clays in producing the finest types of flawless table whiteware. Shown above is the difference in translucence which heating in an electric kiln can bring.***

ods have been introduced which may soon turn the American manufacturers from their older time-tried ways to new methods and a wider use of American materials. These improved refining methods can bring, potentially, a greater mechanization to the industry.

Ceramic scientists have long reasoned that this delayed mechanization of the ceramics industry has, in part, been due to the variations in the clays and other materials which eventually become table whiteware. It is argued that if the automobile industry has to use materials with such variation as those supplied to the ceramic industry, it, too, would have reached a less advanced stage of development.

Hand in hand with ways to utilize clays has been research to improve and develop electric heating in ceramic kilns. Here again TVA with its electricity is naturally interested, but frankly admits that the work is still in a preliminary stage of development. A few electrically heated kilns are in use in the United States and many in Europe.

### New Ceramic Advance

With the same thought in mind the National Bureau of Standards has just about completed the construction of a giant "tunnel" kiln heated by electricity which will be the first of its kind in an American laboratory. Such tunnel kilns make for continuous firing of the pottery or ceramics for they are fed in one end, gradually approach the maturing temperatures of some 2,400 degrees Fahrenheit, and then cool off and come out at the other end of the tunnel.

Such experiment indicates clearly that the American ceramic industry is not a backward business resting on its venerable laurels and content with old-fashioned methods.

### Design by Photography

As another example of progress witness the new photographic process of Walter D. Ford of Columbus, Ohio, which can transfer any given drawing, or even a portrait, into a design for chinaware at a fraction of the present cost. In effect the Ford process adapts the accomplishments of the newspaper or magazine halftone engraving to produce the color gradation in a chinaware design.

The trick of the Ford process is to make photographically a master raised, negative plaster mold of the chosen design containing all the little depressions and little raised portions, which will form the face of the plate. The plastic body materials are pressed against this master mold by a profile tool which forms the bottom of the plate in a projection stage called jiggering.

After drying, the plates are heated in the kiln in a step which makes them hard and creates what the potter calls bisque. The decorative glaze is then applied either by dipping or spraying and the plate is again fired to fuse the glaze.

In the Ford process, where there are depressions, the colors come out deep and intense. On the high spots of the bisque the white background shows through. At the in-between elevations of the bisque one obtains the color shades between these two extremes. The similarities to halftone printing are evident.

*Science News Letter, April 10, 1937*


SO YOU'RE GOING ON A DIET!

**WHY COUNT CALORIES?** ***It isn't how MUCH you eat, but WHAT you eat, that counts!***

Follow the new 14-day reducing diets in Dr. Buckstein's "Food, Fitness & Figure"—here are a large variety of breakfasts, lunches and dinners all figured out for you. Easy to stick to. No starved or "empty" feeling. All vitamins and essential food elements included for greater physical fitness!

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*—Journal of the American Medical Association.*

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## From Page 231

dorsement might cause you embarrassment with the only person you know who is in a position to do this for you. You cannot borrow from a friend for similar reasons. You do not wish to go to a small loan broker because of high rates of interest. You cannot ask for an advance from the firm, because you have already done that to meet the sickness expenses. And so it goes. The problem seems baffling.

The advice of psychologists in such a situation is to get away from the problem temporarily. Go to sleep, or play a set of tennis. Then analyze the tentative solutions you have been considering. You will find that they all center around borrowing money to meet the situation. None of them will work out. It seems impossible to borrow money to make the payment.

### Don't Think of Borrowing

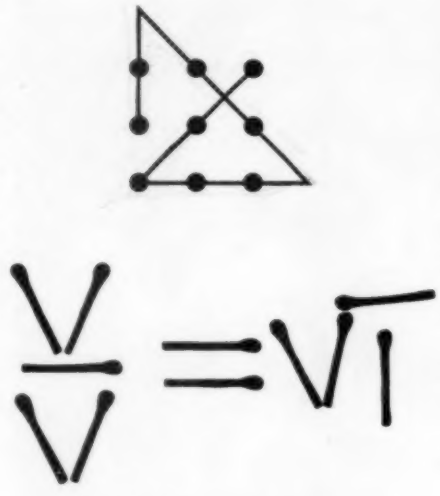
The next step is to push all thought of borrowing from your mind. As soon as you can do that, you will find a rush of new ideas coming in to fill the vacuum thus formed. There are other ways of raising money besides borrowing. You can cash in on some of your securities. You can sell the family Chippendale. You can trade in the car on a cheaper one or maybe even sell it outright.

Some of these new ideas will need to be discarded, too. If they fail to meet the situation, banish them and waste no more time on them. Sooner or later if you keep on looking at the problem from entirely fresh angles the solution will come in a flash and the problem will vanish.

### Three Simple Rules

Three simple rules for successful thinking are offered by Prof. Fernberger:

1. First look your problem over and discover where the difficulty lies. Then try to overcome this particular difficulty. If the attempted solution is not successful, get it completely out of your mind and seek some entirely new and different difficulty which the problem presents. In the automobile situation, at first the difficulty seems to be to borrow money to meet the payment. When no progress was made in meeting that difficulty, the new difficulty of selling something for enough to cover the payment was next considered. If that, too, failed the next step might be consideration of the difficulty of giving up the car without loss of money.



*WEREN'T THEY EASY?*

***The puzzles presented on pages 230 and 231 are not difficult at all—provided you shake off the tendency to try to solve them by conventional methods***

2. Do not stay in a rut and be a creature of habit. Keep your mind open for new problems, new difficulties and new solutions.

3. The solution pattern appears suddenly. You cannot force it. Be forever trying new combinations of past experience in new patterns and do not waste time on following up unsuccessful attempts.

It all sums up to the same thing, really, and that is: Free yourself of the endless circle of repeating useless ideas—get out of the rut—get off the treadmill—try something new. Think!

This article was edited from manuscript prepared by Science Service for use in illustrated newspaper magazines. Copyright, 1937, by Every-Week Magazine and Science Service.

*Science News Letter, April 10, 1937*

ICHTHYOLOGY

## Eggs of Brook Trout Have Beauty of Pearls

**See Front Cover**

PEARLS are the gift of water; we prize their drop-round perfection of shape, their softly gleaming luster. Gift of water also are the round, lustrous, pearly globes shown on the front cover of this number of the SCIENCE NEWS LETTER. But they are living pearls; eggs of trout, that will presently be broken to release the promise of pleasure to sportsmen of the summers of the 1940's.

*Science News Letter, April 10, 1937*

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Industrial hygiene is important to about 49 million persons in the United States.

PHARMACY

## Famous Book on Drugs Passes Century Mark

CELEBRATING more than 100 years of continuous publication, there appears this year the centennial edition of a book unknown to most Americans but one which affects all of those who ever patronize a drug store for medicine.

This book is the U. S. Dispensatory. The book is really an encyclopedia of drugs used in the United States, Canada and Great Britain. Every pharmacist, medical student and chemist is well acquainted with it, and it is known in every country in the world.

The present edition is a huge volume, three inches thick, running to 1,894 pages and listing 28,000 titles. Preparation of this edition took 8 years and the editorial staff will now start work on the next edition, scheduled for publication 10 years from now.

### A Decade's Progress

Dr. Horatio C. Wood, Jr., professor of pharmacology in both the University of Pennsylvania and the Philadelphia College of Pharmacy and Science, is editor-in-chief of the present volume, which is the twenty-second edition of the book that his great-uncle, George B. Wood, originated in 1833.

The tremendous advances in medicine in the past ten years can be seen by comparing the items in this edition of the Dispensatory with those in its immediate predecessor. Ten years ago insulin for diabetes and bismuth for syphilis were just coming into use. Viosterol and liver extract, household words today, were unknown.

### Many New Listings

Other new items are Amytal-sodium, the modern narcotic or sleeping potion; Scarlet Fever Antitoxin; Halibut liver Oil; Orthocresyl Phosphate, the cause of "ginger jake" paralysis; Plasmochin, the synthetic substitute for quinine for malaria; Diphtheria Toxoid; Dinitrophenol, potent but dangerous weight-reducing drug; and Dilaudid, synthetic morphine substitute.

Comparison of this centennial edition with the first edition of the Dispensatory shows that of the ten most important and frequently prescribed medicines today, only two were described in the first edition.

*Science News Letter, April 10, 1937*

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Most of the deep troughs of the ocean are within the great earthquake belts.

METEOROLOGY

# Great Weather Cyclopedia Completed at Harvard

THE FIRST complete weather encyclopedia for the North American continent has just been assembled by Harvard University scientists in cooperation with government meteorologists of the United States, Canada, Alaska and Mexico.

Based on detailed weather tables compiled during the last half-century or more throughout the continent, the atlas affords a bird's eye view of the area's broad climatic features that is expected to be of particular use to meteorologists both in forecasting and in research on the origins of various weather phenomena. It will also be useful as a convenient source of information on North America's wide-ranging climate. Ultimately, through improved forecasting it may also benefit weather-dependent industries, especially agriculture.

### Analyses Are Featured

In addition to exhaustive tables, diagrams and maps, the work features an interpretive text discussing the continent's large climatic provinces, temperatures, pressures and winds, humidity and evaporation, rainfall, cloudiness, fog, thunderstorms, tornadoes, sunshine, climatology of the free air, climate relations to health and crops, and other weather factors.

Also featured are analyses of such phenomena as the droughts of 1930-35, the accompanying dust storms, and the human significance of weather variations.

The survey has been largely prepared by Prof. Charles F. Brooks, director of Harvard's Blue Hill Meteorological Observatory, who completed the original compilation and analyses begun jointly with the late Prof. Robert DeC. Ward of Harvard. The work has been published as part of the massive German Koppen-Geiger Handbook of Climatology, which upon completion will present important weather facts of the entire world.

Most interesting to the average reader, perhaps, is the survey's revelation of what might be called weather championships.

### Sunshine Centers

Outstanding sunshine centers of the United States, for example, are the California-Arizona borderland, which averages more than 300 clear days a year, and St. Petersburg, Fla., which ordinarily has less than five sunless days a year. The country's cloud center, on the other hand, lies over the state of Washington, where coastal cities have about 180 overcast days a year.

Pacific coast areas also hold the country's records for rain and snow, the survey shows, with annual falls of 200 inches found in the Olympic mountains of northwestern Washington, more than five times the average of the northeastern coast. Here too, are the nation's heaviest rains, with occasional runs that last from 30 to 40 days in a row. The Great Lakes region runs a close second, with spells of rain of from 20 to 30 days' duration. Record for the wettest month goes to Helen Mine, Calif., which in January, 1909, had 69 inches of rain.

### The Snowy Mountains

Heaviest snowfalls are found on the western flanks of the Sierra Nevada and Cascade ranges, which have an average of 35 feet each winter. Record fall was in 1906 when 75 feet fell on Mt. Tamarack, near Alpine City, Calif.

Turning to the driest part of the country, the survey awards the palm to southeastern California, southwestern Arizona and western Nevada, where rain averages only eight inches annually. It is quite common for this area to have five winter months without drop of rain or flake of snow.

New England, in contrast, has the country's evenest precipitation, a little over three inches a month to give a total of 40 inches in the normal year.

Thunderstorm center of the nation lies along the central and eastern coast of the Gulf of Mexico with 70 to 90 such storms a year. Low spot for them is San Jose, Calif.—one a year.

Most savage cold waves for severity, suddenness, and frequency occur in the East. Three or four such waves are felt in this region every winter. The severest blizzard ever recorded in the East, in March, 1888, had wind velocities that averaged 25 miles per hour, reached a peak of 75 miles per hour. Drifts 40 feet deep were piled up.

Lightning kills between 500 and 700 people annually in the United States and twice as many are injured, the report declares. Largest mortality occurs in the Ohio Valley and the Middle Atlantic States. Lightning fires take an annual toll of $12,000,000 or more a year.

*Science News Letter, April 10, 1937*

## ● RADIO

*April 13, 5:15 p.m., E.S.T.*

**A DINOSAUR MONUMENT**—Dr. Barnum Brown of the American Museum of Natural History.

*April 20, 5:15 p. m. E.S.T.*

**THE FLUID OF LIFE**—Dr. William H. Howell of the Johns Hopkins University.

**In the Science Service series of radio discussions led by Watson Davis, Director, over the Columbia Broadcasting System.**

## Books

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BOTANY

## NATURE RAMBLINGS
*by Frank Thone*

### Family Traits

ISN'T IT ODD, how the same habits of life will be followed by all members of some plant families!

All oaks, for example, are trees. Nobody ever saw an oak vine, or picked an acorn off an herb. To be sure, many oaks in the Southwest and similar semi-arid regions are bushes, but they are bushes that tend to be trees. The commonest scrub liveoak of the Southwest, to choose a specific case, grows as a bush where conditions are hard, and develops into a tree where life is easier.

On the other hand, there are families —very large ones, too—which are almost without exception herbaceous in habit. The largest of all botanical families, the composites, including such familiar plants as sunflower, aster, lettuce, ragweed, and cocklebur, has only one representative in all North America that produces a genuinely woody stem. In the islands of the warm Pacific, from Hawaii to New Zealand, there are woody composites — which are gazed upon with wonder by visiting botanists.

The vine habit is a fixed habit with a number of plant families. Gathering grapes from thorns would be no more of a rarity, to a botanist, than gathering grapes from trees or bushes.

Some families carry their traits to an almost fantastic length. Of the pineapple family, only the pineapple itself and a very few relatives live on the ground; all the rest roost on branches of trees, as tropical "air plants." The extreme is reached in the so-called Spanish moss of our own South, with its long, trailing, beardlike, growths.

Yet not all plant families are thus fixed in their ways of life. The very large legume family includes herbs like clover and alfalfa, semi-woody growths like leadplant and false indigo, true shrubs like the flowering locust, herbaceous vines like sweetpea and pole bean, woody vines like wisteria, and trees like acacia and Kentucky coffee berry.

A like versatility may be found in plants that we do not at first think of as being so adaptable. Cacti and ferns, for example, run through the whole gamut of herb, shrub, vine, and tree, and in the tropics they also add the role of living perched on the branches of trees, along with the orchids and air plants.

*Science News Letter, April 10, 1937*

ARCHAEOLOGY

# Oldest Bible Dictionary Explains Golden Calf

A BIBLE dictionary written 1,000 years ago, and now published for the first time, is expected to settle at last the mystery of how the Israelites made their Golden Calf, and many another puzzle in the Old Testament.

Lost completely for eight centuries, manuscript copies and fragments of this dictionary have been coming to light in recent years. This manuscript material, now deposited in European libraries, has been studied and edited by Dr. Solomon L. Skoss, professor of Arabic at Dropsie College, Philadelphia. One volume of the dictionary has just been published by Yale University and the second half will appear later.

The dictionary, pronounced the oldest comprehensive Bible dictionary known, was the work of a famous Jewish scholar named David ben Abraham al-Fasi. It was so important in its day that scholars called it simply "The Book." When Arabic dropped out of use among Jewish scholars, books such as this, written in Hebrew characters, but in Arabic words, were laid aside to gather dust in synagogue basements.

The making of the Golden Calf out of earrings brought by Israelite wives, sons, and daughters, as told in Exodus, has puzzled students to know how a molten image could be fashioned with a "graving tool," according to the Revised Version of the Bible. The medieval dictionary writer takes the Hebrew expression to mean instead "a mould into which molten gold and silver are poured," and so it appears that Aaron simply cast the melted earrings into a mould to form the golden idol.

Another cryptic verse told of the prophet Jeremiah being commanded by Jehovah to hide his girdle in rocks by the Euphrates river. How Jeremiah could go from Palestine to the hostile land of Babylon for this mission has baffled commentators, some of whom decided the scene was a dream vision. The 1,000-year-old dictionary explains that the Hebrew word *Perat* in this story does not mean the Euphrates, but a place near Jerusalem called by Arabs of today *Farah*.

David ben Abraham, who wrote the dictionary, is identified as one of the Karaites, a Jewish sect starting in the eighth century, which devoted its entire attention to study of the Old Testament itself, ignoring the Talmud and later Rabbinic writings.

*Science News Letter, April 10, 1937*


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# First Glances at New Books

Additional Reviews On Page 240

**Government**

GOVERNMENT PUBLICATIONS AND THEIR USE—Laurence F. Schmeckebier—*The Brookings Institution,* 446 p., $3. A vast fund of information of almost every type is published by the Government and is available to the public—if it can be located. This volume is a guide to a bewildered public; it describes guides and indexes already existing, calls attention to valuable series of publications and tells where and how they may be obtained. A valuable feature is an 11-page list of libraries receiving and filing government publications.

*Science News Letter, April 10, 1937*

**Documentation**

MANUAL ON METHODS OF REPRODUCING RESEARCH MATERIALS—Robert C. Binkley—*Edwards Bros.,* 207 p., illus., $3.50. This is the result of a survey made for the Joint Committee on Materials for Research of the Social Science Research Council and the American Council of Learned Societies. The various methods of producing copies, ranging from carbon copies to printed books and including microfilming, are examined.

*Science News Letter, April 10, 1937*

**Engineering**

AIR CONDITIONING — INSULATION. TREATS OF THE PRINCIPLES AND APPLICATIONS OF INSULATION AS USED TO RETARD HEAT LOSSES AND GAINS, AND TO GUARD AGAINST FIRE, SOUND, VIBRATION, CONDENSATION, AND TERMITES IN BUILDINGS—J. Ralph Dalzell and James McKinney—*American Tech. Soc.,* 301 p., illus., A technical volume for engineers.

*Science News Letter, April 10, 1937*

**Chemistry**

TALBOT'S QUANTITATIVE CHEMICAL ANALYSIS (8th ed.)—rev. by Leicester F. Hamilton and Stephen G. Simpson—*Macmillan,* 297 p., $2.50. The well-known Massachusetts Institute of Technology text on the subject now reaches another edition but the general content is unchanged. There is a bit more expansion of the theoretical discussions.

*Science News Letter, April 10, 1937*

**Travel**

GRAND TOUR, A JOURNEY IN THE TRACKS OF THE AGE OF ARISTOCRACY—R. S. Lambert, ed.—*Dutton,* 167 p., illus. $2.50. The unusual experience of looking backward several centuries, and touring Europe as a young aristocrat bent on polishing off his education, is offered in this book. What these seventeenth and eighteenth century Britishers saw on the Continent—traveling conditions, art galleries, the Alps as they were, is told by seven authors.

*Science News Letter, April 10, 1937*

**Travel**

EXPLORERS CLUB TALES, TRUE STORIES OF EXPLORATION, RESEARCH AND ADVENTURE, AS TOLD AT THE EXPLORERS CLUB BY MEN OF DARING AND ACHIEVEMENT—*Dodd, Mead,* 301 p., illus., $3. Truth is stranger than fiction, these stories by famous explorers often remind us. The 30 story tellers include such names as Amundsen, Ellsworth, Granger, Holmes, Thomas, and Byrd. And the tales carry the reader from Cape Horn to China and from Morocco to Eskimo land.

*Science News Letter, April 10, 1937*

**Travel**

THE SOUTHERN GATES OF ARABIA, A JOURNEY IN THE HADHRAMAUT—Freya Stark—*Dutton,* 327 p., 116 plates, $3.75. An Englishwoman adventuring alone into the famous and difficult Hadhramaut region; this is the story. Miss Stark has a gift for liking people, a quality which brings Arab tribemen before you as interesting, often charming personalities. The adventure ends with illness and an airplane rescue, instead of the expected arrival at the capital city Shabwa.

*Science News Letter, April 10, 1937*

**Physiology**

THE PHYSIOLOGICAL BASIS OF MEDICAL PRACTICE, A UNIVERSITY OF TORONTO TEXT IN APPLIED PHYSIOLOGY—Charles Herbert Best and Norman Burke Taylor—*Wm. Wood,* 1684 p., illus., $10. Unlike many physiology textbooks, this huge and comprehensive volume from the University of Toronto physiology department connects physiological facts closely with conditions met in medical practice and thus will be valuable to the student as he goes into the clinical part of his medical course.

*Science News Letter, April 10, 1937*

**Chemistry**

THE COSMETIC FORMULARY, HOW TO MAKE COSMETICS, PERFUMES, SOAPS, AND ALLIED PRODUCTS; VOL. I.—H. Bennett—*Chemical Pub. Co. of N. Y.,* 279 p., $3.75. By the author of the *Chemical Formulary.*

*Science News Letter, April 10, 1937*

**History of Science**

NUMBERS AND NUMERALS, A STORY BOOK FOR YOUNG AND OLD—David Eugene Smith and Jekuthiel Ginsburg—*Teachers College, Columbia Univ.,* 52 p., illus., 25c. Pupils who "hate arithmetic" should be the first to have a chance to read this booklet. It puts the enlivening sap of an interesting past into the sometimes dry subject—and should also arouse a lively sense of the advantages of the modern system of numeration and calculation over those that preceded it.

*Science News Letter, April 10, 1937*

**Chemistry**

A LABORATORY GUIDE TO THE STUDY OF QUALITATIVE ANALYSIS, BASED UPON THE APPLICATION OF THE THEORY OF ELECTROLYTIC DISSOCIATION AND THE LAW OF MASS ACTION (10th ed.)—E. H. S. Bailey and Hamilton P. Cady—*Blakiston's,* 322 p., $2. Despite the death of the senior author since the last edition this popular book retains its former title. It has been revised to bring the material up to date, and sections of the book on the properties of ions and their separation have been rewritten to express current views.

*Science News Letter, April 10, 1937*

**Animal Behavior**

INTERVIEWING ANIMALS—Bastian Schmid, transl. by Bernard Miall—*Houghton Mifflin,* 223 p., illus., $3. Dogs, cats, foxes, apes, herons, falcons, all kinds of animals, have served as grist to Bastian Schmid's avid observational mill. There is an almost parental affection in the way he watches them, and in the way he tells of the interesting things they do.

*Science News Letter, April 10, 1937*

**Ornithology**

BIRDS AROUND THE YEAR—Lorine Letcher Butler—*Appleton-Century,* 242 p., illus., $2. This is the kind of book you will want if you like birds but don't know as much about them as you wish you did. It isn't at all learned or textbooky, but it gets essential information across to the reader just the same.

*Science News Letter, April 10, 1937*

**Pharmacy**

THE DISPENSATORY OF THE UNITED STATES OF AMERICA (22nd. ed.)—Horatio C. Wood and others—*Lippincott,* 1894 p., $15, $15.75, thumb indexed. See p. 236.

*Science News Letter, April 10, 1937*

# •First Glances at New Books

Additional Reviews On Page 239

**Agriculture**

HANDBOOK OF FARMING FOR BOYS AND GIRLS—R. A. Power and Vincent Earl Kivlin—*Hale,* 657 p., illus., $2. This book is bound to be popular in rural schools, and it ought to be required reading in city schools as well. And it isn't made-easy, watered-down agriculture, either: if all our present knowledge of farming should by some black magic be taken away, a very decent new start could be made on the basis of what is in this book.

*Science News Letter, April 10, 1937*

**Gardening**

YOUR CITY GARDEN — Margaret McKenny and E. L. D. Seymour—*Appleton-Century,* 215 p., plates, $2.50. Man is ever homesick for Eden; even when he chooses to dwell in Babylon he builds hanging gardens on the city's dizzy towers. Whether your city garden is on a penthouse terrace, or in a crowded back lot, or in pots indoors and windowledge boxes, there will be something for you in this book. Exile in Babylon is harder on plants than it is on ourselves; the authors know of ways to ease it and prolong green lives.

*Science News Letter, April 10, 1937*

**Nature Study**

SCIENCE STORIES, BOOK THREE—Wilbur L. Beauchamp, Harriet M. Fogg, Gertrude Crampton and William S. Gray—*Reilly & Lee,* 256 p., illus., $1.25. About animals and plants and the woods and the weather, in simple sentences of carefully chosen lower-grades-vocabulary words, with plenty of colored pictures.

*Science News Letter, April 10, 1937*

**Dietetics—Psychology**

THE PSYCHOLOGY OF EATING—Lewis Robert Wolberg—*McBride,* 321 p., $3. Besides giving directions and diet lists for reducing or gaining weight, this simply written book contains much amusing, yet sound information on the general subject of food and nutrition. Careful reading should develop not only a point of view on eating, which the author says is necessary, but may also provide the basis for much agreeable and appropriate dinner table conversation.

*Science News Letter, April 10, 1937*

**Anthropology, Juvenile**

INDIANS TODAY — Mario and Mabel Scacheri—*Harcourt, Brace,* 182 p., plates. $2. With beautiful photographs and an entertaining and educational story of visiting Southwestern Indian homes, this book for children offers a glimpse of Indians as they are, "courteous, fun-loving, just, kindly human beings." The Indian as a wild savage or a shiftless ward of the government is not the typical Indian as young Americans should know him, so the authors believe.

*Science News Letter, April 10, 1937*

**Biography**

MARCONI: THE MAN AND HIS WIRELESS — Orrin Dunlap, Jr. — *Macmillan,* 360 p., plates, $3.50. An authoritative biography of the father of wireless, written by the radio editor of the *New York Times.* Although his beginnings of wireless belong to the last century, Marconi is still making progress with micro waves, and radio is still his passion.

*Science News Letter, April 10, 1937*

**Dendrology—Xylology**

FORESTS, TREES, AND WOOD; INFORMATION UNITS FOR STUDENTS IN WOODWORKING—Francis E. Tustison—*Manual Arts,* 95 p., illus., 65c. Fundamentals of information about trees and their habits, wood and its uses, for use by industrial arts classes in the elementary schools. It should help to make woodworking in the school mean something more than just glorified whittling.

*Science News Letter, April 10, 1937*

**Chemistry**

LEÇONS DE CHIME PHYSIQUE APPLIQUÉE A LA BIOLOGIE; VI; Diffusions dans les Liquides, 90 p., 20 fr.; VII Diffusion dans les Gels et les Solides, 50 p., 12 fr. —J. Duclaux—*Hermann & Cie, Paris.*

*Science News Letter, April 10, 1937*

**Engineering—Travel**

THE TRAILER HOME, WITH PRACTICAL ADVICE ON TRAILER LIFE AND TRAVEL—Blackburn Sims—*Longmans, Green,* 128 p., illus., $1.50. Hints and tips on trailer life which should save many a headache; at least on the first venture into this wanderlust type of living.

*Science News Letter, April 10, 1937*

**Nutrition**

FOOD, NUTRITION AND HEALTH (4th ed. rev.)—E. V. McCollum and J. Ernestine Becker—*published by authors, Balto., Md.,* 154 p., $1.50. The latest edition of this simply written, popular book for the layman seems to outdo its predecessors in practical helpfulness and readability.

*Science News Letter, April 10, 1937*

**Astronomy**

AMATEUR TELESCOPE MAKING, ADVANCED: A SEQUEL TO AMATEUR TELESCOPE MAKING—Albert G. Ingalls, ed.—*Munn,* 650 p., illus., $3. The success of amateur telescope making as a hobby which the *Scientific American's* associate editor has so ably fostered, now leads to a more detailed book of methods by more than a score of authors. Over 300,000 words, 57 chapters and 359 illustrations make it a thorough-going reference work in its field.

*Science News Letter, April 10, 1937*

**Physics**

SYMPOSIUM ON RADIOGRAPHY AND X-RAY DIFFRACTION METHODS—*American Society for Testing Materials,* 350 p., illus., $4. In permanent printed form comes this important symposium of 1936 dealing with the application of X-rays in the industrial field.

*Science News Letter, April 10, 1937*

**Engineering**

MARINE ELECTRIC POWER—Q. B. Newman—*Simmons-Boardman,* 159 p., illus., $2. A retired captain of the U. S. Coast Guard writes a simple book on electricity and its applications to ships and shipping. The strong marine point of view will be welcomed by struggling mariners trying to fathom the devices which now help run their vessels.

*Science News Letter, April 10, 1937*

**Technology**

THE MAKING AND MOULDING OF PLASTICS—L. M. T. Bell—*Chemical Pub. Co. of N. Y.,* 238 p., illus., $5. A British book, written in simple style, which reviews the history, the present practices and probable developments in the field of plastic molding.

*Science News Letter, April 10, 1937*

**Chemistry**

INORGANIC CHEMISTRY, A SURVEY OF MODERN DEVELOPMENTS—Sir Gilbert T. Morgan and Francis Hereward Burstall —*Chemical Pub. Co. of N. Y.,* 462 p., $6. A British text that brings the subject up to date and includes mention of the isotopes of hydrogen and the newer work on artificial disintegration.

*Science News Letter, April 10, 1937*

**Housing**

CURRENT DEVELOPMENTS IN HOUSING —*The Annals of the American Academy of Political and Social Science, vol. 90,* 285 p., $2 paper, $2.50 cloth.

*Science News Letter, April 10, 1937*